SEQUENCE LISTING

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<120> Particles for Gene Therapy

<130> 319-2 US

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<141> 2000-02-04

<150> DE 199 04 800.2
<151> 1999-02-05

<160> 19

<170> PatentIn Ver. 2.1

<210> 1
<211> 347
<212> PRT
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Fusion protein comprising a LHBs and heterologous binding site RGD

<400> 1

Met Gly Arg Gly Asp Gly Ala Gly Ala Phe Gly Leu Gly Phe Thr Pro
1 5 10 15

Pro His Gly Gly Leu Leu Gly Trp Ser Pro Gln Ala Gln Gly Ile Leu
20 25 30

Glu Thr Leu Pro Ala Asn Pro Pro Pro Ala Ser Thr Asn Arg Gln Ser
35 40 45

Gly Arg Gln Pro Thr Pro Leu Ser Pro Pro Leu Arg Asn Thr His Pro
50 55 60

Gln Ala Met Gln Trp Asn Ser Thr Thr Phe His Gln Thr Leu Gln Asp
65 70 75 80

Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala Gly Gly Ser Ser Ser Gly
85 90 95

Thr Val Asn Pro Val Pro Thr Thr Val Ser Pro Ile Ser Ser Ile Phe
100 105 110

Ser Arg Ile Gly Asp Pro Ala Leu Asn Met Glu Asn Ile Thr Ser Gly
115 120 125

Phe Leu Gly Pro Leu Leu Val Leu Gln Ala Gly Phe Phe Leu Leu Thr

130 135 140

Arg Ile Leu Thr Ile Pro Gln Ser Leu Asp Ser Trp Trp Thr Ser Leu
145 150 155 160

Asn Phe Leu Gly Gly Thr Thr Val Cys Leu Gly Gln Asn Ser Gln Ser
165 170 175
Pro Thr Ser Asn His Ser Pro Thr Ser Cys Pro Pro Thr Cys Pro Gly
180 185 190

Tyr Arg Trp Met Cys Leu Arg Arg Phe Ile Ile Phe Leu Phe Ile Leu
195 200 205

Leu Leu Cys Leu Ile Phe Leu Leu Val Leu Leu Asp Tyr Gln Gly Met
210 215 220

Leu Pro Val Cys Pro Leu Ile Pro Gly Ser Ser Thr Thr Ser Thr Gly
225 230 235 240

Pro Cys Arg Thr Cys Thr Thr Pro Ala Gln Gly Thr Ser Met Tyr Pro
245 250 255

Ser Cys Cys Cys Thr Lys Pro Ser Asp Gly Asn Cys Thr Cys Ile Pro
260 265 270

Ile Pro Ser Ser Trp Ala Phe Gly Lys Phe Leu Trp Glu Trp Ala Ser
275 280 285

Ala Arg Phe Ser Trp Leu Ser Leu Leu Val Pro Phe Val Gln Trp Phe
290 295 300

Val Gly Leu Ser Pro Thr Val Trp Leu Ser Val Ile Trp Met Met Trp
305 310 315 320

Tyr Trp Gly Pro Ser Leu Tyr Ser Ile Leu Ser Pro Phe Leu Pro Leu
325 330 335

Leu Pro Ile Phe Phe Cys Leu Trp Val Tyr Ile
340 345

<210> 2
<211> 215
<212> PRT
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Fusion protein comprising a HBcAg, a cell-permeability-mediating polypeptide and heterologous binding site RGD

<400> 2

Met Pro Leu Ser Ser Ile Phe Ser Arg Ile Gly Asp Pro Thr Val Gln
1 5 10 15

Ala Ser Lys Leu Cys Leu Gly Trp Leu Trp Gly Met Asp Ile Asp Pro
20 25 30

Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu Ser Phe Leu Pro Ser
35 40 45

Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp Thr Ala Ser Ala Leu
50 55 60

Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys Ser Pro His His Thr
65 70 75 80

Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu Leu Met Thr Leu Ala
85 90 95

Thr Trp Val Gly Val Asn Leu Glu Asp Pro Glu Phe Arg Gly Asp Ala
100 105 110

Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Met Gly Leu Lys
115 120 125

Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
130 135 140

Glu Thr Val Ile Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
145 150 155 160

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
165 170 175

Glu Thr Thr Val Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr
180 185 190

Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser
195 200 205

Gln Ser Arg Glu Pro Gln Cys
210 215

<210> 3
<211> 663
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
DNA coding for a fusion protein comprising a HBcAg, a cell-permeability-mediating polypeptide and heterologous binding site RGD

<400> 3

atgcccatat cgtcaatctt ctcgaggatt ggggaccctg gatccactac tgttcaagcc 60

tccaagctgt gccttgggtg gctttggggc atggacatcg acccttataa agaatttgga 120

gctactgtgg agttactctc gtttttgcct tctgacttct ttccttcagt acgagatctt 180

ctagataccg cctcagctct gtatcgggaa gccttagagt ctcctgagca ttgttcacct 240

caccatactg cactcaggca agcaattctt tgctgggggg aactaatgac tctagctacc 300

tgggtgggtg ttaatttgga agatccagaa ttccgaggcg acgcgtctag agacctagta 360

gtcagttatg tcaacactaa tatgggccta aagttcaggc aactcttgtg gtttcacatt 420

tcttgtctca cttttggaag agaaaccgtt atagagtatt tggtgtcttt cggagtgtgg 480

attcgcactc ctccagctta tagaccacca aatgccccta tcctatcaac acttccggaa 540

actactgttg ttagacgacg aggcaggtcc cctagaagaa gaactccctc gcctcgcaga 600

cgaaggtctc aatcgccgcg tcgcagaaga tctcaatctc gggaacctca atgttagtat 660

tcc 663

<210> 4
<211> 1047
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
DNA coding for a fusion protein comprising a LHBs and heterologous binding site RGD

<400> 4

atgggccgtg gcgaaggagc tggagcattc gggctgggtt tcaccccacc gcacggaggc 60

cttttggggt ggagccctca ggctcagggc atactacaaa ctttgccagc aaatccgcct 120

cctgcctcca ccaatcgcca gacaggaagg cagcctaccc cgctgtctcc acctttgaga 180

aacactcatc ctcaggccat gcagtggaat tccacaacct ttcaccaaac tctgcaagat 240

cccagagtga gaggcctgta tttccctgct ggtggctcca gttcaggagc agtaaaccct 300

gttccgacta ctgcctctcc cttatcgtca atcttctcga ggattgggga ccctgcgctg 360

aacatggaga acatcacatc aggattccta ggaccccttc tcgtgttaca ggcggggttt 420

ttcttgttga caagaatcct cacaataccg cagagtctag actcgtggtg gacttctctc 480

aattttctag ggggaactac cgtgtgtctt ggccaaaatt cgcagtcccc aacctccaat 540

cactcaccaa cctcctgtcc tccaacttgt cctggttatc gctggatgtg tctgcggcgt 600

tttatcatct tcctcttcat cctgctgcta tgcctcatct tcttgttggt tcttctggac 660

tatcaaggta tgttgcccgt ttgtcctcta attccaggat cctcaaccac cagcacggga 720

ccatgccgaa cctgcatgac tactgctcaa ggaacctcta tgtatccctc ctgttgctgt 780

accaaacctt cggacggaaa ttgcacctgt attcccatcc catcatcctg ggctttcgga 840

aaattcctat gggagtgggc ctcagcccgt ttctcctggc tcagtttact agtgccattt 900

gttcagtggt tcgtagggct ttcccccact gtttggcttt cagttatatg gatgatgtgg 960

tattgggggc caagtctgta cagcatcttg agtccctttt taccgctgtt accaattttc 1020

ttttgtcttt gggtatacat ttaaacc 1047

<210> 5
<211> 35
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Primer

<400> 5

ccatattctt gggaacaaga tatccagcac ggggc 35

<210> 6
<211> 33
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Primer

<400> 6

ggattgctgg tggaagatat ctgccccgtg ctg 33

<210> 7
<211> 33
<212> DNA
<213> Artificial sequence

<220>

<223> Description of the artificial sequence:
Primer

<400> 7

cagcacgggg cagatatctt ccaccagcaa tcc 33

<210> 8
<211> 38
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Primer

<400> 8

gccccgtgct ggatatcatc ttgttcccaa gaatatgg 38

<210> 9
<211> 36
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Primer

<400> 9

aaaagatctg gccgtggcga aggagctgga gcattc 36

<210> 10
<211> 30
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Primer

<400> 10

aaaagatctg gtttaaatgt atacccaaag 30

<210> 11
<211> 33

<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Primer

<400> 11

cccgatatca tgtcatctct tgttcatgtc cta 33

<210> 12
<211> 30
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Primer

<400> 12

ggggatatcg gtcgatgtcc atgccccaaa 30

<210> 13
<211> 36
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Primer

<400> 13

gggggatccc gatgtacggg ccagatatac gcgttg 36

<210> 14
<211> 27
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Primer

<400> 14

gggggatccg cggccgcttt acttgta 27

<210> 15
<211> 57
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Primer

<400> 15

nnnagatcta tgcccatatc gtcaatcttc tcgaggattg gggaccctgg atccnnn 57

<210> 16
<211> 30
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Primer

<400> 16

nnnggatcca ctgttcaagc ctccaagctg 30

<210> 17
<211> 36
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Primer

<400> 17

nnngaattct ggatcttcca aattaacacc caccca 36

<210> 18
<211> 39
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Primer

<400> 18

nnngaattcc gaggcgacgc gtctagagac ctagtagtc 39

<210> 19
<211> 30
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Primer

<400> 19

nnnaagcttt ccccacctta tgagtccaag 30